

# **Prospective study of maternal gestational weight gain, gestational diabetes and childhood asthma**

## **Supplementary materials**

Orianne Dumas, Anna Chen Arroyo, M. Kamal Faridi, Kaitlyn James, Sarah Hsu, Camille Powe, Carlos A. Camargo Jr.

**Table S1.** Comparison of maternal and child's characteristics in mother-child pairs with or without missing data for GDM.

	Missing data for GDM		
	No (n=15,171)	Yes (n=1180)	P
<b>Maternal characteristics</b>			
Early pregnancy BMI, kg/m2, %			<0.001
< 20.0	8.4	5.7	
20.0-22.4	19.9	16.3	
22.5-24.9	22.9	18.4	
25-29.9	29.0	27.1	
≥30	19.9	32.5	
GWG, lb, %			<0.001
<15	12.7	28.8	
15-24	25.3	26.2	
25-34	34.4	27.8	
35-44	19.9	12.3	
≥45	7.8	4.9	
GWG relative to recommendations, %			<0.001
Under recommended weight gain	22.9	36.2	
Meets recommended weight gain	36.6	32.9	
Over recommended weight gain	40.5	30.9	
C-section, %	27.8	35.1	<0.001
Nulliparous, %			<0.001
Yes	47.7	42.3	
No	49.3	53.6	
Missing	3.0	4.1	
Age at delivery, mean (SD)	30.3 (6.3)	30.4 (6.8)	0.72
Maternal Race/ethnicity, %			0.008
White	51.5	47.2	
Black	7.5	9.7	
Hispanic	20.0	22.3	
Asian	7.6	7.3	
Other	13.4	13.6	
Maternal asthma, %	8.0	8.1	0.95
Smoking status (3 months prior to pregnancy or during pregnancy), %	7.6	10.1	0.002
Insurance status at birth, %			<0.001
Private	55.5	48.6	

**Table S1.** Comparison of maternal and child's characteristics in mother-child pairs with or without missing data for GDM.

	Missing data for GDM		P
	No (n=15,171)	Yes (n=1180)	
Public	34.3	40.5	
Limited	6.5	6.8	
Other	3.6	4.1	
<b>Child's characteristics</b>			
Female, %	47.8	48.3	0.76
Birth weight, lb, %			<0.001
<5.5	6.4	13.6	
5.5-6.9	26.8	24.8	
7.0-8.4	49.3	42.5	
8.5-9.9	16.1	15.4	
≥10	1.4	3.7	
Gestational age, %			<0.001
<32	0.67	6.1	
32-36	5.8	8.2	
≥37	93.5	85.7	
Atopic dermatitis, %	1426 (9.4)	8.5	0.29
Allergic rhinitis, %	1588 (10.5)	10.1	0.68

BMI – Body Mass Index; GDM - gestational diabetes mellitus; GWG – Gestational Weight Gain

% missing values is displayed for variables with >3% missing values

Women with missing data for GDM include women known to have pre-existing diabetes, who were not screened for GDM, and women with abnormal GLT and no / incomplete OGTT

**Table S2.** Associations of maternal BMI and GWG with incidence of asthma in childhood according to the child's sex

	OR (95% CI) - boys	OR (95% CI) - girls	p-inter
Maternal early pregnancy BMI, kg/m <sup>2</sup>			
< 20.0	1.20 (0.94-1.53)	0.90 (0.65-1.25)	0.11
20.0-22.4 (ref.)	1	1	
22.5-24.9	<b>1.22 (1.01-1.47)</b>	1.07 (0.85-1.35)	0.45
25-29.9	1.13 (0.94-1.36)	<b>1.31 (1.06-1.62)</b>	0.25
≥30	<b>1.33 (1.10-1.62)</b>	<b>1.26 (1.00-1.58)</b>	0.88
Maternal GWG (lb)†			
<15	1.03 (0.85-1.24)	1.09 (0.87-1.36)	0.57
15-24	1.01 (0.87-1.19)	0.88 (0.73-1.06)	0.25
25-34 (ref.)	1	1	
35-44	0.97 (0.81-1.14)	0.97 (0.79-1.19)	0.98
≥45	1.12 (0.89-1.40)	0.84 (0.62-1.13)	0.17
GWG relative to recommendations†			
Under recommendations	1.05 (0.9-1.22)	1.05 (0.87-1.26)	0.82
Meets recommendations	1	1	
Over recommendations	0.99 (0.86-1.14)	1.03 (0.87-1.21)	0.44

BMI – Body Mass Index; GWG – Gestational Weight Gain; OR – Odds Ratio; CI – Confidence Interval. Analyses were adjusted for maternal age at delivery, asthma, maternal race/ethnicity, smoking status, insurance status at birth, mode of delivery (C-section). †Analyses were further adjusted for maternal early pregnancy BMI.

**Table S3.** Associations of GWG with incidence of asthma in childhood according to maternal early pregnancy BMI.

Maternal GWG (lb)	OR (95% CI) - 20-24.9 kg/m <sup>2</sup>	OR (95% CI) - ≥25 kg/m <sup>2</sup>	p-inter
<15	0.97 (0.69-1.35)	0.96 (0.80-1.16)	0.91
15-24	0.98 (0.80-1.18)	0.87 (0.73-1.04)	0.37
25-34 (ref.)	1	1	-
35-44	0.88 (0.72-1.07)	1.03 (0.85-1.26)	0.26
≥45	0.98 (0.74-1.30)	1.02 (0.78-1.32)	0.79
GWG relative to recommendations			
Under recommendations	0.99 (0.82-1.18)	1.04 (0.85-1.27)	0.76
Meets recommendations	1	1	-
Over recommendations	0.92 (0.77-1.11)	1.10 (0.95-1.28)	0.12

BMI – Body Mass Index; GWG – Gestational Weight Gain; OR – Odds Ratio; CI – Confidence Interval.

Analyses were adjusted for maternal age at delivery, asthma, maternal race/ethnicity, smoking status, insurance status at birth, mode of delivery (C-section).

**Table S4.** Associations of GDM with incidence of allergic and non-allergic asthma in childhood, with further adjustment for gestational age.

	All asthma		Non-allergic asthma		Allergic asthma	
	No of cases	OR (95% CI)	No of cases	OR (95% CI)	No of cases	OR (95% CI)
GDM, Carpenter-Coustan criteria						
No	1,980	1	1,301	1	679	1
Yes	122	1.17 (0.95-1.45)	78	1.11 (0.86-1.44)	44	1.25 (0.91-1.74)
GDM, National Diabetes Data Group criteria						
No	2,015	1	1,318	1	697	1
Yes	87	<b>1.37 (1.06-1.76)</b>	61	<b>1.44 (1.07-1.94)</b>	26	1.20 (0.79-1.82)

BMI – Body Mass Index; GDM – gestational diabetes mellitus; OR – Odds Ratio; CI – Confidence Interval. Analyses were adjusted for maternal early pregnancy BMI, age at delivery, asthma, maternal race/ethnicity, smoking status, insurance status at birth, mode of delivery (C-section), and gestational age.

**Table S5.** Associations of GDM with incidence of asthma in childhood according to the child's sex.

	OR (95% CI) - boys	OR (95% CI) - girls	p-inter
GDM, Carpenter-Coustan criteria			
No	1	1	
Yes	1.20 (0.92-1.57)	1.26 (0.91-1.74)	0.56
GDM, National Diabetes Data Group criteria			
No	1	1	
Yes	<b>1.54 (1.12-2.12)</b>	1.28 (0.85-1.93)	0.70

BMI – Body Mass Index; GDM – gestational diabetes mellitus; OR – Odds Ratio; CI – Confidence Interval. Analyses were adjusted for maternal early pregnancy BMI, age at delivery, asthma, maternal race/ethnicity, smoking status, insurance status at birth, mode of delivery (C-section).